

ESTIMATING MOVEMENT AND ABUNDANCE OF ATKA MACKEREL (*PLEUROGRAMMUS MONOPTERYGIUS*) WITH TAG AND RELEASE DATA

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ABSTRACT

Atka mackerel, *Pleurogrammus monopterygius* are found in dense aggregations in the Aleutian Islands. Their highly contagious distribution makes them difficult to survey with the current NMFS trawl survey design resulting in highly variable biomass estimates.

Atka mackerel is the main prey item of the endangered Steller sea lion in the Aleutian island area. Trawl exclusion zones have been established around sea lion rookeries to protect localized prey abundance. To measure the fishery impact on local Atka mackerel aggregations it became necessary to estimate local Atka mackerel abundance and movement.

A mark recapture experiment was conducted in Seguam Pass inside (Area 1) and outside (Area 2) the trawl exclusion zone. In 1999 1375 tagged fish were released. A biomass of 76,679 metric tons (mt) was estimated in Area 2 with the Peterson method. In 2000, 8773 tagged fish were released. An integrated tagging model was developed to estimate biomass and movement rates. Biomass was estimated to be 117,900 mt (SD 45,267) in Area 1 and 82,057 mt (SD 13,311) in Area 2. Movement rate after 107 days from Area 2 to Area 1 was 0.0056 (SD 0.0072) and from area 1 to 2 was 0.81 and associated with high uncertainty (SD 0.3). Tagging as means of abundance and movement estimation seems to work well for Atka mackerel's localized aggregations. In the case of Seguam pass, the trawl exclusion zones seem to work in protecting a large biomass of prey available for Steller Sea lion foraging around their rookeries. Increase in tags released and expansion of Atka mackerel tagging into other areas of local Atka mackerel aggregations is recommended to increase precision of population and movement estimates and expand our knowledge of Atka mackerel distributions.